

**AMENDMENTS TO THE CLAIMS**

Claims 1 - 31 (Cancelled).

Claim 32 (Currently Amended). A method of inhibition of tumorigenesis and for altering a ~~for treating cancer, for restoring an aberrant~~ methylation pattern in a patient DNA, ~~or for changing a methylation pattern in a patient DNA~~ comprising the step of administering to a patient in need thereof a therapeutically effective amount of an antagonist or inhibitor of DNA demethylase, said DNA demethylase comprising amino acids 150-411 of SEQ ID NO.:2, or a homologue thereof.

Claim 33 (Currently Amended). The method according to claim 32, wherein said antagonist is a double stranded C<sup>m</sup>G oligonucleotide that inhibits demethylase at a K<sub>i</sub> of 50nM.

Claim 34 (Previously presented). The method according to claim 33, wherein said oligonucleotide is [C<sup>m</sup>GC<sup>m</sup>GC<sup>m</sup>GC<sup>m</sup>G] .



Claim 35 (Currently amended). The method according to claim 32, wherein the inhibitor comprises an anti-DNA demethylase antibody or an antisense oligonucleotide of DNA demethylase or ~~a small molecule~~ an imidazole derivative thereof.

Claim 36 (Currently Amended). The method according to ~~one of claims~~ claim 32, wherein a change of the methylation pattern activates a silent gene.

Claim 37 (Cancelled).

Claim 38 (Cancelled).

Claim 39 (New). A method of measuring demethylase activity comprising measuring a level of volatilization of a methyl group, released as methanol, from methyl-cytosine present in methylated DNA, wherein said level of volatilization of said methyl group as methanol is related to said demethylase activity.

Claim 40 (New). The method of claim 39, further comprising determining a level of conversion of methyl-cytosine present in methylated DNA to cytosine present in DNA.